

Exhibit O

McGraw-Hill

**Dictionary of
Electrical and
Computer
Engineering**

McGraw-Hill

New York Chicago San Francisco Lisbon London Madrid
Mexico City Milan New Delhi San Juan Seoul Singapore
Sydney Toronto

The McGraw-Hill Companies

All text in the dictionary was published previously in the McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Sixth Edition, copyright © 2003 by The McGraw-Hill Companies, Inc. All rights reserved.

McGRAW-HILL DICTIONARY OF ELECTRICAL AND COMPUTER ENGINEERING, copyright © 2004 by The McGraw-Hill Companies, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0 DOC/DOC 0 9 8 7 6 5 4

ISBN 0-07-144210-3



This book is printed on recycled, acid-free paper containing a minimum of 50% recycled, de-inked fiber.

This book was set in Helvetica Bold and Novarese Book by TechBooks, Fairfax, Virginia. It was printed and bound by RR Donnelley, The Lakeside Press.

McGraw-Hill books are available at special quantity discounts to use as premiums and sales promotions, or for use in corporate training programs. For more information, please write to the Director of Special Sales, Professional Publishing, McGraw-Hill, Two Penn Plaza, New York, NY 10121-2298. Or contact your local bookstore.

Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of electrical and computer engineering.

p. cm.

ISBN 0-07-144210-3

I. Computer engineering—Dictionaries. 2. Electric engineering—Dictionaries.

TK7885.A2M37 2004

004'.03—dc22

2004049888

adaptive signal processing [COMMUN] The design of adaptive systems for signal-processing applications. { 'adəp-tiv 'sig-nəl 'prə-sə-siŋ }

adaptive structure [ENG] A structure whose geometric and inherent structural characteristics can be changed beneficially in response to external stimulation by either remote commands or automatic means. { 'adəp-tiv 'stræk-čər }

adaptive system [SYS ENG] A system that can change itself in response to changes in its environment in such a way that its performance improves through a continuing interaction with its surroundings. { 'adəp-tiv 'sis-təm }

adaptive system theory [COMPUT SCI] The branch of automata theory dealing with adaptive, or self-organizing, systems. { 'adəp-tiv 'sis-təm ,the-ə-rē }

adaptor [COMPUT SCI] A printed circuit board that is plugged into an expansion slot in a computer to communicate with an external peripheral device. { 'adəp-tər }

Adcock antenna [ELECTROMAG] A pair of vertical antennas separated by a distance of one-half wavelength or less and connected in phase opposition to produce a radiation pattern having the shape of a figure eight. { 'ad-käk ,an'ten-ə }

Adcock direction finder [NAV] A radio direction finder utilizing one or more pairs of Adcock antennas. { 'ad-käk də'rek-shən ,fin-dər }

ADCON See address constant. { 'ad,kän }

adconductor cathode [ELECTR] A cathode in which adsorbed alkali metal atoms provide electron emission in a glow or arc discharge. { 'ad-kən'dəkt-ər 'kath,əd }

add See add operation. { 'ad }

adder [COMPUT SCI] A computer device that can form the sum of two or more numbers or quantities. [ELECTR] A circuit in which two or more signals are combined to give an output-signal amplitude that is proportional to the sum of the input-signal amplitudes. Also known as adder circuit. { 'ad-ər }

adder circuit See adder. { 'ad-ər ,sər-kət }

add-in [COMPUT SCI] An electronic component that can be placed on a printed circuit board already installed in a computer to enhance the computer's capability. { 'ad ,in }

adding circuit [ELECTR] A circuit that performs the mathematical operation of addition. { 'ad-iŋ 'sər-kət }

adding machine [COMPUT SCI] A device which performs the arithmetical operation of addition and subtraction. { 'ad-iŋ mə'shēn }

add-in program [COMPUT SCI] A computer program that enhances the capabilities of a particular application. { 'ad,in ,prō-grəm }

addition item [COMPUT SCI] An item which is to be filed in its proper place in a computer. { 'ə-di-shən 'tīd-əm }

addition record [COMPUT SCI] A new record inserted into an updated master file. { 'ə-di-shən ,rek-əd }

addition table [COMPUT SCI] The part of memory that holds the table of numbers used in addition

in a computer employing table look-up techniques to carry out this operation. { 'ə-di-shən ,tā-bəl }

additive synthesis [ENG ACOUS] A method of synthesizing complex tones by adding together an appropriate number of simple sine waves at harmonically related frequencies. { 'ad-ə-div 'sin-thə-səs }

additive white Gaussian noise [COMMUN] Noise that contains equal energy per frequency across the spectrum of the noise employed. Also known as white noise. Abbreviated AWGN. { 'ad-əd-iv wīt 'gaʊ-sē-ən 'nɔiz }

add-on [COMPUT SCI] A peripheral device, such as a printer or disk drive, that is added to a basic computer. { 'ad,ɒn }

add-on memory [COMPUT SCI] Computer storage that is added to the original main storage to enhance the computer's processing capability. { 'ad,ɒn 'mem-rē }

add operation [COMPUT SCI] An operation in computer processing in which the sum of two or more numbers is placed in a storage location previously occupied by one of the original numbers. Also known as add. { 'ad ,äp-ə,rā-shən }

address [COMPUT SCI] The number or name that uniquely identifies a register, memory location, or storage device in a computer. { 'ad-res }

addressable [COMPUT SCI] Capable of being located by a computer through an addressing technique. { 'ad-res-ə-bəl }

addressable cursor [COMPUT SCI] A cursor that can be moved by software or keyboard controls to any point on the screen. { 'ad-res-ə-bəl 'kər-sər }

address book [COMPUT SCI] A feature in an e-mail program for storing e-mail addresses. { 'ad-rəs ,bʊk }

address bus [COMPUT SCI] An internal computer communications channel that carries addresses from the central processing unit to components under the unit's control. { 'ad-res ,bʌs }

address computation [COMPUT SCI] The modification by a computer of an address within an instruction, or of an instruction based on results obtained so far. Also known as address modification. { 'ad-res ,käm-pyʌ'tā-shən }

address constant [COMPUT SCI] A value, or its expression, used in the calculation of storage addresses from relative addresses for computers. Abbreviated ADCON. Also known as base address; presumptive address; reference address. { 'ad-res ,kän-stənt }

address conversion [COMPUT SCI] The use of an assembly program to translate symbolic or relative computer addresses. { 'ad-res kən,vər-zhən }

address counter [COMPUT SCI] A counter which increments an initial memory address as a block of data is being transferred into the memory locations indicated by the counter. { 'ad-res ,kaʊnt-ər }

address field [COMPUT SCI] The portion of a computer program instruction which specifies where a particular piece of information is located in the computer memory. { 'ad-res ,fēld }

counter/frequency meter [ENG] An instrument that contains a frequency standard and can be used to measure the number of events or the number of cycles of a periodic quantity that occurs in a specified time, or the time between two events. { 'kaunt-ər 'frē-kwən-sē ,mēd-ər }

countermeasures set [ELECTR] A complete electronic set specifically designed to provide facilities for intercepting and analyzing electromagnetic energy propagated by transmitter and to provide a source of radio-frequency signals which deprive the enemy of effective use of his electronic equipment. { 'kaunt-ər ,mez-ərz ,set }

counterpoise [ELEC] A system of wires or other conductors that is elevated above and insulated from the ground to form a lower system of conductors for an antenna. Also known as antenna counterpoise. { 'kaunt-ər ,pɔiz }

counter tube [ELECTR] An electron tube having one signal-input electrode and 10 or more output electrodes, with each input pulse serving to transfer conduction sequentially to the next output electrode; beam-switching tubes and cold-cathode counter tubes are examples. { 'kaunt-ər ,tüb }

counter voltage [ELEC] The reverse voltage that appears across an inductor when current through the inductor is shut off. { 'kaunt-ər ,vɔl-tij }

counting circuit [ELECTR] A circuit that counts pulses by frequency-dividing techniques, by charging a capacitor in such a way as to produce a voltage proportional to the pulse count, or by other means. Also known as counter circuit. { 'kaunt-ij ,sər-kət }

counting-down circuit See frequency divider. { 'kaunt-ij ,daun ,sər-kət }

counting rate-voltage characteristic See plateau characteristic. { 'kaunt-ij ,rāt 'vɔl-tij ,kar-ik-tə'ris-tik }

couple [ELEC] To connect two circuits so signals are transferred from one to the other. [ELECTR] Two metals placed in contact, as in a thermocouple. { 'kəp-əl }

coupled antenna [ELECTROMAG] An antenna electromagnetically coupled to another. { 'kəp-əld an'ten-ə }

coupled circuits [ELEC] Two or more electric circuits so arranged that energy can transfer electrically or magnetically from one to another. { 'kəp-əld 'sər-kəts }

coupled systems [COMPUT SCI] Computer systems that share equipment and can exchange information. { 'kəp-əld 'sis-təmz }

coupled transistors [ELECTR] Transistors connected in series by transformers or resistance-capacitance networks, in much the same manner as electron tubes. { 'kəp-əld tran'zis-tərz }

coupler [ELEC] A component used to transfer energy from one circuit to another. [ELECTROMAG] 1. A passage which joins two cavities or wave-

guides, allowing them to exchange energy. 2. A passage which joins the ends of two waveguides, whose cross section changes continuously from that of one to that of the other. { 'kəp-lər }

coupling [ELEC] 1. A mutual relation between two circuits that permits energy transfer from one to another, through a wire, resistor, transformer, capacitor, or other device. 2. A hardware device used to make a temporary connection between two wires. { 'kəp-liŋ }

coupling aperture [ELECTROMAG] An aperture in the wall of a waveguide or cavity resonator, designed to transfer energy to or from an external circuit. Also known as coupling hole; coupling slot. { 'kəp-liŋ ,ap-ə-čər }

coupling capacitor [ELECTR] A capacitor used to block the flow of direct current while allowing alternating or signal current to pass; widely used for joining two circuits or stages. Also known as blocking capacitor; stopping capacitor. { 'kəp-liŋ kə'pas-əd-ər }

coupling coefficient [ELECTR] The ratio of the maximum change in energy of an electron traversing an interaction space to the product of the peak alternating gap voltage and the electronic charge. { 'kəp-liŋ ,kō-'i'fish-ənt }

coupling hole See coupling aperture. { 'kəp-liŋ ,hɔl }

coupling loop [ELECTROMAG] A conducting loop projecting into a waveguide or cavity resonator, designed to transfer energy to or from an external circuit. { 'kəp-liŋ ,lup }

coupling probe [ELECTROMAG] A probe projecting into a waveguide or cavity resonator, designed to transfer energy to or from an external circuit. { 'kəp-liŋ ,prɔb }

coupling slot See coupling aperture. { 'kəp-liŋ ,slɔt }

course programmer [CONT SYS] An item which initiates and processes signals in a manner to establish a vehicle in which it is installed along one or more projected courses. { 'kɔrs 'prɔ ,gram-ər }

courseware [COMPUT SCI] Computer programs designed to be used in computer-aided instruction or computer-managed instruction. { 'kɔrs ,wer }

coverage [ELECTROMAG] A spatial account of the regions of useful sensitivity in a radar's surroundings that can be affected, for example, by multipath propagation or by obscuring terrain. { 'kav-rij }

COZI [COMMUN] An ionospheric sounding system for determining propagation characteristics of the ionosphere at various angles at any instant; used to determine how well long-distance, high-frequency broadcasts are reaching their intended destinations. Derived from communications zone indicator. { 'kɔzi }

CPA See color-phase alternation.

CPE See computer performance evaluation.

CPM See critical path method.

C power supply [ELECTR] A device connected in the circuit between the cathode and grid of a vacuum tube to apply grid bias. { 'sē 'paʊr sə ,pli }